

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the Application of

Yasushi NOGUCHI et al.

Attn: PCT Branch

Application No. New U.S. National Stage of PCT/JP2004/011759

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Docket No.: 127001

For: METHOD FOR MANUFACTURING HONEYCOMB FORMED BODY,
METHOD FOR MANUFACTURING HONEYCOMB FILTER, AND
HONEYCOMB FILTER

**SUBMISSION OF THE AMENDMENT OF CLAIMS UNDER ARTICLE 19
(35 U.S.C. 371(c)(3))**

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

Attached hereto is a submission of the amendment of claims under Article
19(1) (Rule 46). The attached material replaces all the claims.

Respectfully submitted,



James A. Oliff
Registration No. 27,075

Jesse C. Collier
Registration No. 53,839

JAO:JOC/mps

Date: February 10, 2006

OLIFF & BERRIDGE, PLC
P.O. Box 19928
Alexandria, Virginia 22320
Telephone: (703) 836-6400

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CLAIMS

1. (Amended) A method for manufacturing a
honeycomb formed body by use of a forming material
5 including water and two or more types of aggregate
particulate materials containing fine particles having an
average particle diameter of 10 μm or less, the method
comprising:

a mixing step of mixing (first mixing) the two or
10 more types of aggregate particulate materials to thereby
obtain a forming blend (dry powder); and

a kneading step of adding water to the forming
blend (dry powder) and kneading them to thereby obtain a
clay,

15 wherein at least the mixing step mixes the
materials so as to inhibit generation of an agglomerate and
set a TG mixture degree to 0.2 or less by use of either of
the aggregate particulate materials which are classified
beforehand or whose surfaces are coated before start of the
20 mixing of the aggregate particulate materials and means for
mixing the materials while applying pressurizing vibration
to the materials in order to avoid the mixture of the
agglomerate into the clay, and

the clay obtained in this manner is formed into a
25 honeycomb structure in which a large number of cells are
partitioned and formed by partition walls, and dried to
obtain the honeycomb formed body.

2. (Amended) The method for manufacturing the honeycomb formed body according to claim 1, further comprising:

5 the kneading step of kneading the forming blend (wet powder) to obtain the clay after the mixing performed by further adding water to the forming blend (dry powder) obtained by the first mixing and mixing (second mixing) them to obtain a forming blend (wet powder).

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3. (Deleted)

4. (Deleted)

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5. (Deleted)

6. (Deleted)

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7. (Amended) The method for manufacturing the honeycomb formed body according to claim 1 or 2, wherein when water is added, a surfactant is further added as a dispersant.

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8. (Deleted)

9. (Deleted)

10. (Amended) The method for manufacturing the
honeycomb formed body according to claim 1, wherein the
pressurizing vibration is generated by containing the
forming material and pebbles in a container, and vibrating
5 the container.

11. (Amended) The method for manufacturing the
honeycomb formed body according to claim 1 or 2, wherein
the mixing step is performed using a mixer having a
10 stirring blade, and
the mixing is carried out by rotating the stirring
blade to stir the forming material while applying a
shearing force to the forming material.

15 12. (Deleted)

13. (Deleted)

14. (Deleted)

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15. (Amended) The method for manufacturing the
honeycomb formed body according to claim 1 or 2, wherein
the mixing step and the kneading step are performed with
individual devices, respectively, and

25 a mixer which performs the mixing step is directly
connected to a kneader which performs the kneading step.

16. (Amended) The method for manufacturing the
honeycomb formed body according to claim 1 or 2, wherein as
the aggregate particulate material, there is used a
cordierite forming material which contains alumina (Al_2O_3)
5 fine particles having an average particle diameter of 10 μm
or less and/or aluminum hydroxide ($\text{Al}(\text{OH})_3$) fine particles
having an average particle diameter of 10 μm or less.

17. (Deleted)

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18. (Deleted)

19. (Amended) The method for manufacturing the
honeycomb formed body according claim 1 or 2, wherein water
15 is added while sprayed.

20. (Deleted)

21. (Amended) The method for manufacturing the
20 honeycomb formed body according to claim 1 or 2, wherein a
material containing a powder passed through a sieve whose
aperture is 4/5 or less of a slit width of a die for
extrusion-molding the honeycomb formed body is used as the
aggregate particulate material.

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22. (Deleted)

23. (Deleted)

24. (Deleted)

5 25. (Deleted)

26. (Deleted)

27. (Deleted)

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28. (Amended) A honeycomb filter comprising: a porous honeycomb structure having a large number of cells formed by partitioning the structure by porous partition walls; and plugging portions which alternately plug one opening and the other opening of each of the large number of cells, the filter being constituted so that foreign matters are trapped by the partition walls, when a fluid to be treated introduced into a part of the cells passes through the partition wall to flow into the adjacent cell, the honeycomb filter having less internal defects, wherein a soot leak cell ratio evaluated by a soot printing test is 1 cell/1000 cells or less.

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29. The honeycomb filter according to claim 28, wherein at least the porous honeycomb structure is constituted of cordierite.

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30. (added) The honeycomb filter according to claim 28, wherein the porous honeycomb structure is manufactured by the manufacturing method according to claim 1 or 2.

Remarks based on Article 19(1)

Claim 1 has clarified that to effectively prevent generation of an internal defect which is a problem to be
5 solved by the present invention and achieve providing of a
honeycomb formed body whose strength has been increased, at
least the mixing step mixes the materials so as to inhibit
generation of an agglomerate and set a TG mixture degree
indicating a mixture degree of the resultant mixture to 0.2
10 or less by use of either of the aggregate particulate
materials which are classified beforehand or whose surfaces
are coated before start of the mixing of the aggregate
particulate materials and means for mixing the materials
while applying pressurizing vibration to the materials in
15 order to avoid the mixture of the agglomerate into the clay.

It is admitted that Cited Document 1 discloses a
method for manufacturing the honeycomb formed body by use
of a forming material including two or more aggregate
particulate materials having different grain sizes.
20 However, the document does not disclose a method for
manufacturing the honeycomb formed body having less
internal defects represented by a soot leak and being
superior in isostatic strength as apparent from Table 1
described in Page 24 of the present description, in which
25 at least the mixing step mixes the materials so as to
inhibit generation of an agglomerate and set a TG mixture
degree indicating a mixture degree of the resultant mixture

to 0.2 or less by use of either of the aggregate particulate materials which are classified beforehand or whose surfaces are coated before start of the mixing of the aggregate particulate materials and means for mixing the materials while applying pressurizing vibration to the materials in order to avoid the mixture of the agglomerate into the clay. The effect of the present invention is apparent in comparison of the examples with the comparative examples, and it is obvious that it is not possible to manufacture the honeycomb formed body having less internal defects and superior in isostatic strength unless the TG mixture degree and the amount of agglomerates remaining on a sieve satisfy the conditions of the present invention.

Claim 2 has clarified its dependency on Claim 1.

Claims 7, 11, 15, 16, 19, and 21 have clarified their dependencies on Claims 1 and 2. Claim 10 has clarified its dependency on Claim 1 accompanying the amendment of Claim 1.

Claim 21 has clarified, in relation to the amendment of Claim 1 and the claims deleted in accordance with the amendment, that there is used, as the aggregate particulate material, a material containing a powder passed through a sieve whose aperture is $4/5$ or less of a slit width of a die for extrusion-molding the honeycomb formed body.

Claim 28 has added a restriction "less internal defects" on the ground of the descriptions of Paragraphs

0075 and 0103 of Description to define the property more specifically.

Moreover, Claim 30 is presently added to
specifically define that the honeycomb filter derives from
5 the honeycomb formed body manufactured by the method of
Claim 1.